Government of Bermuda

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The Secretary
Office *of* the Secretary
Federal Communications Commission
445 12th Street S.W.
Washington, D.C. **20554**
United States of America

Dear Sir/Madam

IB Docket No. 06-123

The Establishment of Policies and Service Rules for the Broadcasting-Satellite Service at the 17.3-17.7 GHz Frequency Rand and at the 17.7-17.8 GHz Frequency Band Internationally, and at the 24.75-25.25 GHz Frequency Band for Fixed Satellite Services Providing Feeder Links to the Broadcasting-Satellite Service and for the Satellite Services Operating Bidirectionally in the 17.3-17.8 GHz Frequency Band.

Introduction

The Department of Telecommunications of Bermuda's Ministry of Telecommunications and E-Commerce welcomes the opportunity to offer its comments' on the Commission's proposals. For many years, Bermuda and the United States have enjoyed good trading relations and have been able to co-operate on matters of mutual economic and commercial concern. Bermuda is one of a number of small countries which are Overseas Territories of the United Kingdom, and which are located within the International Telecommunication Union (ITU)'s Region 2. In recent years, a number of satellite operators have established themselves in Bermuda, and in addition, Bermuda itself has a number of allotments in the ITU's Plans, as described in Appendices 30, 30A and 30B of the Radio Regulations. One of these allotments, at 96.2° West longitude, forms the basis of a filing deposited with the ITU. That filing is intended to facilitate the successful exploitation of the original allotment.

[1] This letter describes the comments and observations of this Department, and we do not try to represent *the* view of the Government of Bermuda as a whole, nor the collective or individual view of *those* satellite operators who are incorporated in Bermuda.

Summary

This Department generally supports the Commission's proposals. We believe that the services to which this NPRM refers should be licensed according to the framework of the *First Space Station Reform Order* and regarded as a "GSO-like" service, and that the provisions of *DISCO II* should apply to these services as to other services, and we believe that increased competition serves the interests of consumers. We also support the policy of discouraging undue speculation, although we do not believe that there should be excessive reliance upon the attainment of "milestones". We also support the public service obligations and geographic service requirements proposed by the Commission. Rather than the adoption of administratively-prescribed performance standards, we believe that established international procedures should be followed wherever possible, as these promote and facilitate the conclusion of the technical and commercial agreements necessary to the development and introduction of new services.

Licensing and Processing Procedures

Licensine Framework

We agree. with the Commission's proposal to include these services in the licensing framework created by the *First Space Station Reform Order.* We agree with the .Commission that the allocation of the unplanned 17/24 GHz bands to the broadcasting-satellite service can be seen as analogous to direct-to-home services in the fixed satellite service (DTH FSS). We believe that the Commission's alternative suggestion, that 17/24 GHz BSS should be characterized as DBS, as they provide a similar service, is unsuitable. Although DTH FSS and DBS have sufficient in common for them lo be regarded as functionally equivalent from the point of view of the consumer, as paragraphs 7 and 27 of the NPRM note. the separate definitions in the Commission's Rules are largely based upon the fact that DTH FSS tends to use spectrum which is not internationally planned, whereas DBS does tend to use spectrum which is internationally planned. DBS services therefore must take priority over later unplanned services which may use the same, planned, spectrum such as the 17 GHz band. This priority must also be extended to ensure the protection of allotments in the ITU's Plans and assignments in the Lists, and this must include feeder links to those services.

The services to which this NPRM refers should be subject to the licensing framework created by *the First Space Station Reform Order,* and regarded as a "GSO-like" service. The *Northpoint* decision also supports licensing according to that framework. We also believe that satellite services should be presumed to be "international" in character, due to the notification and co-ordination procedures of the ITU, and in recognition of the fact that most satellite systems are at their most efficient when deployed to serve as many territories as possible.

As the services to which this NPRM refers are unplanned, although the 17 GHz band itself is subject to planning in Appendix 30A of the Radio Regulations, the market should be allowed to determine their allocation. We believe that the "first come first served" principle is the most effective and efficient way of achieving this. provided that satellite operators are allowed to negotiate between themselves technical and commercial solutions to the problems of sharing. and there are appropriate regulatory safeguards to prevent undue speculation and spectrum "warehousing".

Safeguards Against Speculation

We support the ITU's policy of discouraging "paper satellites", and encourage any measure taken in support of this policy. We believe that it is the duty of each administration to find the balance between reasonable commercial adventure, and undue speculation or "warehousing", and, having due regard to that balance, it is the right of each administration to establish its own mechanisms to support that policy.

Annual Reporting Requirement

We share the Commission's belief that regular reports from space station operators are a useful way of monitoring the progress of satellite network projects and enabling the space station operator to demonstrate that they are taking all necessary action to bring the project to fruition. We believe that this is true regardless of whether there is a formal annual reporting requirement, or whether the report is used to monitor compliance with milestones, or for any other reason. This Department believes that effective and efficient regulation depends upon mutual trust between the regulator and those regulated, and that frequent, uninhibited dialogue is vital to this relationship.

We also believe that if space station operators are able to report at intervals of less than one year, so that significant events are immediately known, there would be more "granularity" in progress monitoring. The overall progress of a project could be taken into account, rather than the missing of a single milestone event, which may have been unforeseeable or due to circumstances beyond the control of the space station operator, causing the failure of an otherwise successful project.

We believe that if the Commission intends that there should be an annual reporting requirement, then all licensees, whether in the bands to which this NPRM refers, or other bands, and whether U.S operators or non-U.S operators, should be treated equally and should be subject to the same requirements. However, we do not believe that these reports should be the sole determinant of the Commission's adjudication of whether agreed milestones have been reached, and that account should be taken of the overall progress of the project and of the space station operator's ability to demonstrate that they have devoted their best efforts to make progress.

We have no comments upon the question of higher performance bonds, other than to state that this Department does not favour their use as a means of preventing speculation, as we regard them as a "blunt instrument".

Licence Terms

We appreciate the reasoning of the Commission that the Commission's Rules only permit the Commission to licence broadcasting facilities for a maximum of eight years, however, we note that the procedures described in the Radio Regulations allow BSS systems added to the List to remain on the List for 15 years, and that this can be extended. Further, most commercial satellites being planned or built today are intended for a service life-expectancy of longer than eight years. We believe that in the interests of clarity and certainty, it would be preferable if the Commission were to adopt licensing rules which reflected international regulatory norms.

We also suggest that, with regard to the constraints which the Commission finds placed upon it by its own Rules and to which it refers in paragraph 25, the Commission explore the possibility of amending the terms of its satellite licences so that those provisions which govern the operation of the satellite come into effect on a date co-incident with the bringing into use of the space station.

Replacement Satellites

We broadly support a policy which allows satellite operators to replace "like with like", Replacement of a satellite after a premature in-orbit failure (such as caused hy solar activity, or a manufacturing flaw) would be one example of when this would he appropriate.

This process should not be abused to allow the replacement of life-expire&satellites, to allow continuity of an existing commercial service using technology which is now outdated, as this distorts the market and stifles innovation. Nor should it allow unregulated launches. Whatever process it adopts, the Commission should recognise the need for appropriate due diligence to be applied, and the need to balance the requirements of the space station operator with the needs of other stakeholders. Whilst there is a case for a "grant stamp" procedure, it should he selectively applied, and recognition should be taken of ITU procedures for extending the life of satellite network notifications.

Non-U.S.-Licensed Satellite Ooerators

We agree with the Commission's proposals in paragraphs 15 to 18, that non-U.S-licensed operators wishing to provide services in this band should be subject to the DISCO II framework. This will be consistent with the current practice for DIM FSS and DBS service provision, and will provide greater regulatory certainty. However, we believe that it would be beneficial to the interests of consumers if there was an increased presumption in all cases, not just MSS and non-DTH FSS, that entry to the market will further competition and is in the interests of consumers.

Public Interest and Other Statutory Obligations

Public Interest Obligations

We agree with the Commission's proposals, as described in paragraph 20, that to the extent that 17/ 24 GHz band licenseesprovide DBS-like services, they should be subject to the public interest obligations contained in the Commission's Rules. This will ensure that 17/ 24 GHz BSS service providers are subject to the same rules as DTH FSS and DBS service providers, and will promote competition. Similarly, in so far as they provide DTH FSS-like and DBS-like services. we believe that 17124 GHz licensees should be treated in the same way as DTH FSS and DBS licensees in matters relating to the retransmission of copyright material.

Equal Employment Opportunities

This Department supports any measure which promotes equality of opportunity.

Geographic Service Rules

To the extent that 17/24 GHz band licensees may provide DTH FSS-like or DBS-like services, we support the Commission's proposal in paragraph 23 to adopt rules analogous to those in effect for DBS satellites in Section 25.148(c) of the Commission's rules. As we have said elsewhere in this letter, DTH services operating in the unplanned bands are, from the perspective of the consumer, similar to DBS services operating in the planned bands, and so licensing procedures should reflect this. This is supported by the fact that the services to which this NPRM refers are to be categorised as BSS, and not as FSS. We believe that the requirement to provide service to Alaska and Hawaii is sound, and should include all rural and remote areas.

Paragraph 23 of the NPRM notes that the Commission's Rules require licensees to provide service to Alaska and Hawaii where such service is technically feasible from the authorised orbital location, and that applicants for licences who do not propose to provide service to Alaska and Hawaii must provide technical analyses to the Commission demonstrating that such service is not feasible as a technical matter or that, while technically feasible, such service would require so many compromises in satellite design and operation as to make it economically unreasonable. We do not perceive this requirement to be an onerous one.

We agree with the Commission's expectation, in paragraph 24, that many of the satellite operators who apply for licences to operate in the 17/24 GHz BSS bands will wish to deploy multiple satellites in their system or fleet. We believe that the Commission should apply the geographic service rules to the extent that these operators intend to supply DBS-like services, so that if an operator seeks to deploy a single satellite which does not cover the whole area, they are subject to the requirements of Part 25.148 of the Commission's rules, whilst at the same time, this does not preclude the deployment of systems which are intended to provide specialist local coverage through the use of small spot beams. This latter scenario could promote the development of innovative services to underserved rural and remote areas.

As noted, we believe that space stations should be regarded as inherently international, and should be subject to the procedures described in Articles 9 and 11 of the Radio Regulations. We do not perceive that these procedures introduce any additional uncertainty, as they are universally applicable, understood by the satellite industry, and when followed, promote certainty. In addition, it is vital that these international procedures are followed to protect the interests of other countries who have allotments in the Plans, and additional uses recorded in the regional Lists.

We share the concerns of the Commission, as described in paragraph 25, that these procedures can create difficulties when a satellite operator is seeking to develop a system to serve a limited area such as a single country, especially where this is their "home" country. In cases where the administration has concerns about the provision, or under-provision, of a particular service in their own territory, we disagree with the Commission's supposition that these procedures increase uncertainty, and we believe that the opposite is true. In our experience, the way in which these procedures can create problems is either when they are not followed correctly, or one or more parties does not follow them at all. These procedures ensure that administrations are informed about the orbital location, and coverage area, of proposed satellite networks, and in the case of modifications to planned assignments, or additional uses in the Lists, account can be taken of whether an administration has agreed to be in the coverage area. We suggest that generally, the rules of the market should apply and satellite operators should be free to explore their own technical and commercial solutions. The free exchange of information is essential to this process.

We believe that by undertaking appropriate due diligence within the international process. and by a willingness to enter agreements with other administrations, and to co-operate with industry (such as through "public-private partnerships", or similar schemes), then administrations have ample means at their disposal to promote the provision of services to under-served areas

Emergency Alert Svstem

This Department agrees with the Commission's concerns about a public emergency alert system (EAS), and we agree with the Commission's proposal that 17/24 GH7 BSS hand licensees providing DBS-like services should be subject to the EAS requirements Not only will this requirement ensure that all satellite operators providing DTH-like or DBS-like services be subject to the same requirements, but it also means that consumers will receive equal service in the event of an emergency. We appreciate that there are concerns about the provision of local or State warnings, as opposed to nation-wide warnings, but we offer no further comment.

In the broader context of EAS, Bermuda shares the concerns of the United States, especially with regard to extreme weather conditions. Whilst a smaller landmass and population, our concerns are no less real, and we are actively investigating means of increasing our levels of "disaster preparedness", and the resilience of our communications systems. The level of preparation necessary is the same, regardless of whether the disaster is expected or not, natural or made-made. We are aware that in times of emergency, resilient communications are not only necessary for *the* dissemination of vital information to the public, but also to mitigate the effects of disaster, and to assist with the restoration of normal services. Our investigations include the secure backing up of vital business and government records, the provision of redundant systems to increase the resilience of communications, and the possibility of facilitating the remote control of satellites. We are actively supporting those operators who are seeking to deploy innovative systems with added redundancy and increased resilience, and we would actively support any regional initiatives either in this field, or in the field of emergency alerting generally.

Use of BSS Spectrum at 17.7-17.8 GHz

We believe that the Commission's question about the feasibility of conducting tracking, telemetry and control (TT&C) functions at the band edge is best answered by satellite operators themselves. However, we emphasise our concern that unplanned TT&C operations in the 17 GHz band must not be afforded priority over planned services and TT&C of DBS satellites already transmitting in that band.

In paragraph 33, the Commission notes that it has previously recognised that TT&C functions for U.S-licensed satellites are best performed at facilities located within the United States, and that locating such facilities in a foreign country could adversely affect an operator's ability to maintain control of its spacecraft. This Department is aware that this is a matter of concern *to* a number of responsible administrations (and launching states), and it is a matter to which we have given much thought.

Firstly, we believe that it is important to distinguish the primary satellite control centre (SCC") or network operations centre ("NOC") from the actual earth station used to conduct the TT&C function, as separate entities. Whilst we recognise that in many cases these entities are co-located, we also recognise that it is possible for the SCC or NOC, from where the TT&C function is performed, to be physically and geographically separate from the earth station which links to the satellite. They could be, literally, at opposite sides of the globe.

We consider that there are two areas of concern to administrations (and to satellite operators), The first of these is that the space station should be operated in the way for which it is authorised. The second is that the spacecraft carrying the space station should at all times remain under control. We share these concerns. We also believe that EchoStar's observation, quoted by the Commission in paragraph 73 and referred to in paragraph 76, implies that there are circumstances under which satellites owned by different operators could, or should, be under the control of the same person or agency.

Secondly, we believe that as it is possible to separate these functions, it is also possible to separate responsibility for carrying them out, and to put in place effective arrangements for their efficient execution, from remote locations. We believe that the Commission should reconsider its view that TT&C functions for U.S-licensed spacecraft are best performed from within the United States, and consider whether under certain circumstances, and subject to appropriate legal arrangements, and arrangements for extra-jurisdictional execution, TT&C functions can be performed as well from locations outside of the United States.

Orbital Spacing and Minimum Antenna Diameter and Performance Standards

Orbital Spacing

We understand the Commission's supposition, in paragraph 34. that the 17/ 24 GHz bands will be used predominantly by GSO-like systems, but we have no further comments on how sharing with NGSO-like systems might be facilitated.

Paragraph 35 notes that the Commission's orbital spacing policy has been to accommodate the largest number of satellites in an environment that minimises harmful interference. In the interests of competition and consumer choice, we support this policy. Whilst we recognise the technical reasons for minimum separation, due to the similarities between 17/ 24 GHz BSS and DTH FSS, we believe that similar orbital separation rules should apply. However, this would be inconsistent with the Commission's current requirement of 9° separation between DBS satellites, and this suggests that either 17/ 24 GHz BSS satellites should be separated at 9° intervals, as should DTH FSS satellites, or that the Commission should relax its requirement for 9° separation between DBS satellites.

The Commission notes in paragraph 34 that it derives its 9° separation requirement from the separation between U.S allotments in the ITU's Plan, However, this fails to take into account the fact that other countries also have allotments in the Plans, as the Commission notes in paragraph 37, and the separation between allotments is not uniform. The Commission notes in paragraph 72 that the co-location of allotments can be "nominal"co-location, and, in paragraph 75 *et seq.*, that cross-polar, adjacent, overlapping channels can be co-located. As suggested in paragraph 74, this suggests that under appropriate technical conditions, orbital separations of far less than 9° should be allowed.

We note the Commission's comments in paragraph 43 about the petitions to allow separation of less than 9° between DBS satellites. As Bermuda has an allotment in the Region 2 Plan, and has deposited a filing at the ITU which is intended to promote this allotment, we must declare our interest in those proceedings. It is our belief that the Commission's current 9° separation requirement is as unsuitable for 17/24 GHz BSS services as it would be for DTH FSS and other unplanned services. The Commission should, therefore, remove the minimum orbital separation requirement from all services, including DBS services, and, as suggested in paragraph 78, should allow operators, both U.S operators and non-U.S operators, full freedom to use the procedures in the Radio Regulations to co-ordinate their proposed services with existing services and with planned allotments. By adopting this policy, the Commission will not need to adopt an orbital spacing plan, or other policies necessary to achieve a balance between the various technical and economic considerations in the provision of satellite services, and we are confident that this will not lead to an unmanageable increase in capacity (and corresponding drop in unit value), provided that international procedures are followed to grant priority to existing services and planned assignments, and that there are adequate safeguards in place against speculation

Minimum Antenna Diameter and Performance Standards

We believe that current ITU-R Recommendations provide an adequate basis for determining minimum antenna performance standards. The Commission notes at paragraph 46 that consumers are willing and able to acquire equipment which suits their individual requirements. and in paragraph 47, the commission notes that it has not, historically, opted to regulate explicitly the diameter or other performance standards of receive-only antennas. We believe that this should remain the policy of the Commission, and that the performance of receive-only antennas should be determined by the requirements of the system in which they are deployed, as the Commission suggests in paragraph 48. Future developments, such as the provision of two-way or "interactive" television services, should be addressed according to the relevant standards in force at the time.

Technical Requirements for Intra-Service Operations

Uplink Power Levels

We believe that the normal international co-ordination procedures provide sufficient flexibility necessary for the development and introduction of new services.

Downlink Power Levels

We believe that the normal international co-ordination procedures provide sufficient flexibility necessary for the development and introduction of new services.

Reverse Band Operations

We agree with the Commission's analysis as described in paragraph 56.

Ground Path Interference

We agree with the Commission's analysis in paragraph 57 et seq , and we agree that the provisions of Appendix 7 should be used to resolve potential issue of interference between earth stations. We believe that the information requirements described in Table 9b and in paragraph 61 are simply a reflection of the information which is necessary for co-ordination and the preparation of the establishment of an earth station. We also believe that it is important that DBS feeder uplink stations should be afforded protection against other services, where these services are unplanned and are proposed subsequent to the establishment of the DBS feeder link uplink.

Ground Path Interference into BSS Telemetry Earth Stations

We agree with the Commission's concerns that interference into a TT&C system could result in the loss of control over the spacecraft, and we agree with the Commission's proposal in paragraph 68 that applicants should make a technical showing with their application. We do not consider this an onerous requirement, and we suggest that the applicant could demonstrate compliance through showing the results of a topographical and radio-frequency site-survey. We do not believe that there should be a blanket preclusion of the co-location of DBS feeder-link earth stations with 17/24 GHz BSS telemetry stations, but that it should be for the applicant to demonstrate the practicality of co-location

Increased Flexibility for Spectrum

This NPRM arose out of the Commission's intent to implement an international allocation. Therefore, the Domestic Table of Frequency Allocations should reflect this in so far as this is practically possible.

We agree that if technically feasible, allowing the use of the 24 GHz band for DBS feeder-links could increase flexibility, and could reduce the potential for interference problems associated with reverse band operations. However, we do not believe that the use of the 24 GHz band should be used as the first choice for DBS feeder-links unless and until the ITU's BSS Plan is modified to take account of this, and unless and until this happens, then planned and listed feeder-links in the 17 GHz band should be afforded all necessary protection.

Space Path Interference

Having due regard to the arguments of other parties, repeated by the Commission in paragraph 73, and the research findings mentioned by the Commission in paragraph 74, we believe that normal international co-ordination procedures should apply in all cases, whether involving co-location or clustering or not, and that normal priority should be afforded to assignments in the Plan and additional uses already added to the List. When seeking to deploy 17/24 GHz BSS space stations, or to deploy DBS or DBS-like space stations, it is important that due regard be given to the allotments or assignments of other countries, and that the proposed services be co-ordinated with these.

We agree with the Commission's proposal that prospective 17/24 GHz licensees must be able to demonstrate that they will be able to minimise interference to DBS systems, especially regarding the telecommand signal. In connection with this, we support the spirit of the proposal made in paragraph 79, although we believe that the detail of such arrangements should be left to the satellite operators concerned

Other Technical Requirements

Tracking, Telemetry and Command (TT&C) Frequencies

Notwithstanding the desirability of clearly-defined rules which promote regulatory certainty, we believe that if a satellite operator develops a system which will increase the resilience of their TT&C links but is not covered by those rules, then, if this is compatible with other services and will achieve the desired end, such proposals are to be supported. A case-by-case licensing arrangement is not uncommon in other jurisdictions and would enable the Commission to evaluate each proposal on its merits.

Polarization and Full Freauencv Re-use Requirements

We recognise that the radio spectrum is a finite resource, and we generally support any policy which promotes its efficient use. However, we believe that satellite operators are best placed to comment on the technical aspects of how to maximise efficiency according to the capabilities of today's technology, and technology currently under development. We believe that arrangements for increasing efficiency between competing services can best be concluded during the co-ordination process.

Technical Requirements for Inter-Service Operations

Sharing in the 24 GHz Band

We have no comments to make about the Commission's proposals for sharing between services in the 24 GHz band, and we believe that those best placed to advise on such matters are those who currently operate such systems.

Sharing in the 17 GHz Band

We have no comments to make about the Commission's proposals for sharing between services in the 17 GHz band, and we believe that those best placed to advise on such matters are those who currently operate such systems.

Comments on Rules Proposed in Annex B of the NPRM

In general, we believe that the amended and additional Rules proposed by the Commission are appropriate. We welcome particularly the proposed addition to \$25.201. In the interests of clarity and certainty, we support the use of internationally-accepted standard definitions, including those of the ITU's Radio Regulations, wherever possible, unless those definitions are clearly inadequate.

We have no further comments on this NPRM, and I would like to thank the Commission for giving us the opportunity to comment on these proposals.

Yours sincerely,

William G. Francis, CCP
Director of Telecommunications